UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
OREGON OPERATIONS OFFICE
805 SW Broadway, Suite 500
Portland, Oregon 97205

June 17, 2009

Mr. Robert Wyatt
Northwest Natural & Chairman, Lower Willamette Group
220 Northwest Second Avenue
Portland, Oregon 97209

Re: Portland Harbor Superfund Site; Administrative Order on Consent for Remedial Investigation and Feasibility Study; Docket No. CERCLA-10-2001-0240 – EPA comments on Treatment Beneficial Use Market Survey

Dear Mr. Wyatt:

EPA has reviewed the Treatment Beneficial Use Market Survey dated April 3, 2009. EPA comments are attached. As stated previously, EPA is interested in exploring a regional approach to the management of contaminated sediments in the Portland Harbor area. Although the costs for treatment and management of contaminated sediments represent a significant portion of the overall cost of sediment remedies, these costs are likely to come down in the future. In addition, dredging activities at the Portland Harbor site are likely to generate between 1 and 10 million cubic yards of material (i.e., feedstock). By recognizing contaminated sediments as a resource and pursuing a comprehensive, self-sustaining, long-term management approach, the overall cost of sediment management may be reduced through the beneficial reuse of dredged sediments.

EPA comments focus on the solicitation of additional parties (e.g., industrial trade organizations) and the presentation of the information obtained in the survey. EPA recommends contacting these additional parties and initiated a broader conversation about a regional sediment management program prior to completion of the remedial action alternative screening process and the detailed and comparative analysis of remedial action alternatives.

If you have any questions, please contact Chip Humphrey at (503) 326-2678 or Eric Blischke (503) 326-4006. All legal inquiries should be directed to Lori Cora at (206) 553-1115.

Sincerely,

Chip Humphrey
Eric Blischke

Remedial Project Managers

cc: Greg Ulirsch, ATSDR
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EPA Comments on Treatment Beneficial Use Market Survey
June 17, 2009

Introduction:

On April 3, 2009, the Lower Willamette Group submitted a Draft Treatment Beneficial Use Market Survey. EPA requested the survey to gather initial information to understand the potential market for materials that may be generated as part of the Portland Harbor Superfund site. Specifically, EPA requested that the LWG: "include an initial market survey for potential "beneficial uses" of treated and untreated excavated sediment and the development of a regional sediment management program that may incorporate dredge material from other projects…"; and "…conduct a general survey specific to the Portland area…"; and offered to "…assist the LWG in developing and advocating for a regional sediment management program that may reduce the overall costs of sediment management at the Portland Harbor site."

General Comments:

LWG attempted to survey 19 contractors, 15 public entities, 14 sand suppliers, 10 topsoil suppliers, and 4 glass aggregate suppliers in the Portland area. Partial responses were received from 6 contractors, 8 public entities, 8 sand suppliers, 4 topsoil suppliers and 2 glass aggregate suppliers. In addition, 7 landfills were contacted with 5 providing responses, however little mention of the landfill information was made in the report. It appears that no effort was made to contact or survey trade organizations, industrial manufacturers or utilities to determine if general market data was available on potential feed stock volumes and prices in the Portland area or more regionally. This information may be useful for context in framing potential markets, material specifications, demand quantities and pricing for sediment reuse.

Recommended Restatement of Study Objectives

The survey design was designed to address specific questions related to the Portland Harbor site. However, by working with trade organizations, it may be possible to develop estimates of potential quantities used by these entities on an annual basis and provide for more comprehensive survey designs and questions. For the purposes of the Portland Harbor site, the relevant information includes:

1. The type of materials used in the Portland area that may be augmented or replaced by treated or untreated sediments;
2. Specifications these materials must meet for a given use;
3. Quantity of materials used in the Portland area by given use;
4. Range of costs based on specifications met and quantity range sold;
5. Rough proportion/quantities of materials to be generated at Portland Harbor site; and
6. Which specifications for use each material will meet with or without additional processing and treatment.

Recommended Categorization of Generated Materials

In order to evaluate the beneficial use market for materials generated from the site, it is useful to categorize the condition of the sediment that will be generated as part of any removal action. By

evaluating the quantities and characteristics of the sediment as generated, identification of treatment and transportation issues and costs can be focused on only those methods necessary to achieve required specifications for the intended beneficial use. The types of materials that will potentially be generated by remedial actions at the site can be categorized as:

A. Slurry sediment – generated by hydraulic dredging with excess water
B. Wet sediment – generated by mechanical dredging or hydraulic dredging after water removal, fails paint filter test.
C. Moist sediment – generated by either of the above, but drained to extent necessary to pass paint filter test.
D. Classified sediment – sediment separated into specific particle size ranges; likely gravel, sand, and silt/muck
E. Treated sediment – sediment augmented or generated by treatment process; includes products of solidification/stabilization; chemical and thermal treatment

Recommended Generic Use Categories for Beneficial Use

Finally, generic use categories would useful to aid in determining markets, costs, prices, transportation, and allowable material specifications. These may be:

1. Alternative Daily Cover – use by landfills; chemical criteria consistent with landfill type/disposal permit; potential generated sediment types: C, D
2. General Fill – use by residential, commercial, industrial; institutional controls required for materials that don't meet residential/ecological chemical criteria; potential generated sediment types: C, D, E
3. Structural Fill - use by residential, commercial, industrial; must pass grain size, structural strength requirements; institutional controls required for materials that don't meet residential/ecological chemical criteria; potential generated sediment types: D, E
4. Soil Amendment – use by residential, commercial; institutional controls required for materials that don't meet residential/ecological chemical criteria; potential generated sediment types: B, C, D, E
5. Industrial Raw Materials – use by commercial, industrial; specific requirements for maximum organics, grain size, moisture content, etc.; institutional controls and/or consideration for receptor exposures for total produced material life-cycle may be required; potential generated sediment types: B, C, D, E

Objectives:

Using the recommendations from above, the study can be reorganized to more readily communicate the gathered information and identify data gaps that: 1) can be filled using mutually agreed to assumptions; or 2) may require additional work. Restated objectives of the study should include:

Objective 1 – The type of materials used in the Portland area that may be augmented or replaced by treated or untreated sediments: Section 2.3 of the survey adequately addresses this objective.

Objective 2 – Specifications these materials must meet for a given use. The survey attempts to address this in a variety of sections and breaks down the beneficial use products and applications into: natural aggregates, fill, glass aggregates, and lightweight aggregates and cement additives (Sections 2.3.1 through 2.3.4). It may be more useful to use the Recommended Generic Use Categories presented above to more readily discuss the specifications that a material must meet as presented below:

- Alternative Daily Cover: Passes paint filter test; no chemical concentrations above permitted limits.

- General Fill: Passes paint filter test; no chemical concentrations above limits based on use (e.g. residential, commercial, public works, industrial); institutional controls would be required for material that poses potential risk to human health or the environment.

- Structural Fill: Passes paint filter test; no chemical concentrations above limits based on use (e.g. residential, commercial, public works, industrial); institutional controls would be required for material that poses potential risk to human health or the environment; must pass grain size, organic content and structural strength requirements – exact specifications will vary based on ultimate use. As stated in the report, one high volume use would be sand for road and pipeline construction that may be useful to develop a specific set of specifications from ODOT and WSDOT requirements. Specifications for maximum chemical concentrations would also need to be developed in accordance with state regulations for this use if generic limits published by each state were not deemed appropriate.

- Soil Amendment: Passes paint filter test; no chemical concentrations above limits based on use (e.g. residential, commercial, public works, industrial); institutional controls would be required for material that poses potential risk to human health or the environment; must pass grain size, organic content and structural strength requirements – generated sediments B, C, and D may be used in varying percentages depending on specific requirements for the product and characteristics of the other feed stocks. As an example, wet sediment (B) may be useful to add to a composting facility to condition the material and add texture to the final product. Classified sediment (D) may be useful to add to a high quality topsoil to achieve specific drainage characteristics.

- Industrial Raw Materials: Potential generated sediment types that could be used as industrial raw materials vary depending on the specific requirements of the products to be made and processes used to make them. In addition, certain uses, such as using the sediment as a component of concrete, can effectively immobilize certain contaminants. The report discusses glass aggregate, lightweight aggregates and cement additives as potential products of remediation. However, the report should also consider the use of partially treated material. For example, treated sediment that still contained low levels of contamination may be used in ways that minimize risk to human health and the environment such as the use of partially treated material in concrete production. As the

type of risks associated with use of the end product could be substantially different depending on the material produced, it may be useful to develop a specific high volume scenario, such as use as an additive in concrete production for public roads or structures, and develop specifications for maximum chemical concentrations as well as required grain size, structural strength, and organic carbon content requirements. Given the high cost to produce glass aggregate and the relatively low value assigned to it in the survey, beneficial use costs will probably not enter into the decision making process unless a high value product can be identified. Note that another use of natural aggregates could be for asphalt mixtures.

Overall, the survey fairly describes the beneficial use products and applications and cautions on the additional considerations that need to be considered. The above reorganization is suggested for communication purposes rather than technical reasons.

Objective 3 – Quantity of materials used in the Portland area by given use: The survey did not really develop a useful estimate of the quantity of materials that maybe used for a given purpose with the possible exception of sand and general fill. According to the Gene Leverton and Associates (GLA) study referenced in the survey, the overall sand market in the Portland area was estimated to be 3.25 million tons per year in 2009, based on predictions made in 2005. General fill use was estimated from public entity and landfill responses to range from 500,000 to 5,000,000 cubic yards with an estimated time frame of 2 to 20 years. Therefore, the Portland area general fill market could be estimated at 250,000 cubic yards per year.

Additional estimates should be made to determine potential annual usage in the Portland area by Recommended Generic Use Category. Approximate annual quantities could be estimated as follows:

Recommended Generic Use Category	Basis for Estimate	Estimated Annual Market in Portland Area
Alternative Daily Cover	7 landfills x 50 wks/yr x 5 days/wk x 1 acre working face x 6 in of material	280,000 cubic yards/year (cy/yr)
General Fill	Survey	250,000 cy/yr
Structural Fill	Survey	3.25 million tons/year 2.5 million cy/yr
Soil Amendment	Not likely to be high volume	
Industrial Raw Materials	Not likely to be high volume	
Total Market		3.3 million cy/yr

Objective 4 - Range of costs based on specifications met and quantity range sold: Based on a review of the presented prices in the survey and the responses in the questionnaires, a useful summary of estimated prices according to Recommended Generic Use Category would be as presented in the following table.

Recommended Generic Use Category	Estimated Price (Cost)
Alternative Daily Cover	($3.00/cy) Ref: Landfill 4
General Fill	$6.00/ton Ref: Material Supplier 10 $7.80/cy
Structural Fill	$8.50/ton Ref: Material Supplier 12 $11.00/cy
Soil Amendment	$21.00/cy Ref: Material Supplier 21
Industrial Raw Materials	$4.25/ton Ref: midpoint of survey $5.50/cy

Objective 5 - Rough proportion/quantities of materials to be generated at Portland Harbor site and which specifications for use each material will meet with or without additional processing and treatment: The final objective requires that estimates be made of each component of the Portland Harbor site and what proportion of the material may be suitable for each Recommended Generic Use Category. Using the volumes developed by LWG as a starting point, approximately 6.7 million cubic yards of material have been identified for removal with 2.9 million cubic yards estimated to not require treatment and the remaining 3.8 million cubic yards potentially benefitting or requiring treatment. LWG states in the survey that approximately 20 percent of the total potential volume may yield clean sand without significant separation processing.

Recommended Generic Use Category	Basis for Estimate	Estimated Quantity to be generated from site
Alternative Daily Cover	Materials requiring some treatment	3,800,000 cy
General Fill	Non-treated, non-sand 2.9 million cy (1-.2) fraction non-sand	2,320,000 cy
Structural Fill	Non-treated 2.9 million cubic yards x 20 percent clean sand	580,000 cy
Soil Amendment	Not likely to be high volume	
Industrial Raw Materials	Not likely to be high volume	

Using the estimated price (cost) table for unit rates, alternate daily cover would cost approximately $11.4 million for disposal, while General Fill and Structural Fill would generate $18.1 million and $6.4 million, respectively. Assuming that transportation costs for disposal of the material is equal to transportation costs for beneficial use, the project would realize a net revenue of $13.1 million given the assumptions used herein. Obviously, the rate of generation of these materials could exceed market demand, and sufficient areas to stockpile a portion of the material may be required to balance supply and demand from the remedial operations.